GALERIUS

GAME DEVELOPMENT

Team No : 02

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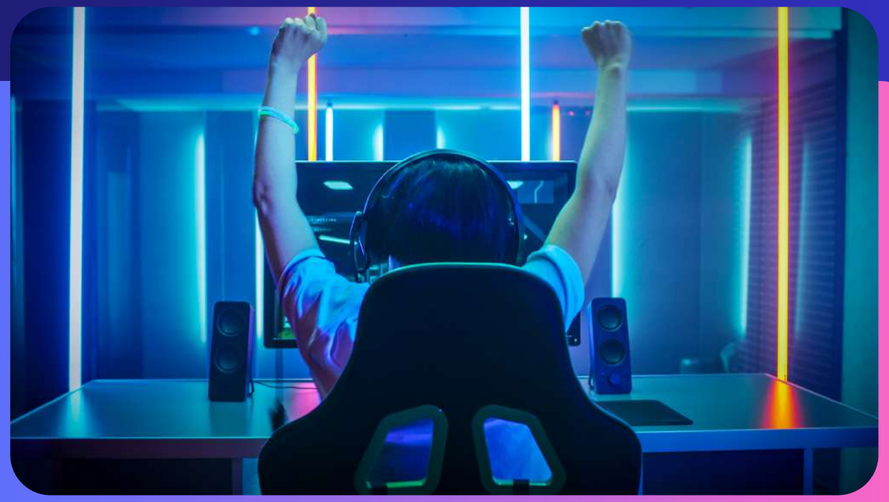


PROBLEM STATEMENT

The elderly population faces challenges related to cognitive decline, social isolation, and limited physical activity, adversely impacting their overall well-being.

Traditional entertainment options often fall short in addressing these issues effectively. There is a critical need for the development of engaging and accessible digital games specifically designed to cater to the unique needs of the elderly, promoting cognitive stimulation and physical activity.

Aims to guide the development of a solution that not only entertains but also contributes to the holistic well-being of the elderly, addressing the gaps in current entertainment offerings for this demographic

EXISTING SOLUTIONS

1. Brain Training Games: Games like Sudoku, crossword puzzles, and brain training apps such as Lumosity are popular choices for stimulating cognitive abilities.

2. Physical Activity Games: Games like Wii Sports or motion-controlled games on consoles like Nintendo Switch can encourage physical activity and coordination.

PROJECT SCOPE

To Develop a game for the elderly people

Focused on enhancing cognitive abilities, mitigating social isolation, and promoting physical activity, the game will feature an accessible and engaging design, including intuitive controls, adjustable difficulty levels, and a progression system.

Enhancing them to the world of gaming experience created just for them

LITERATURE SURVEY

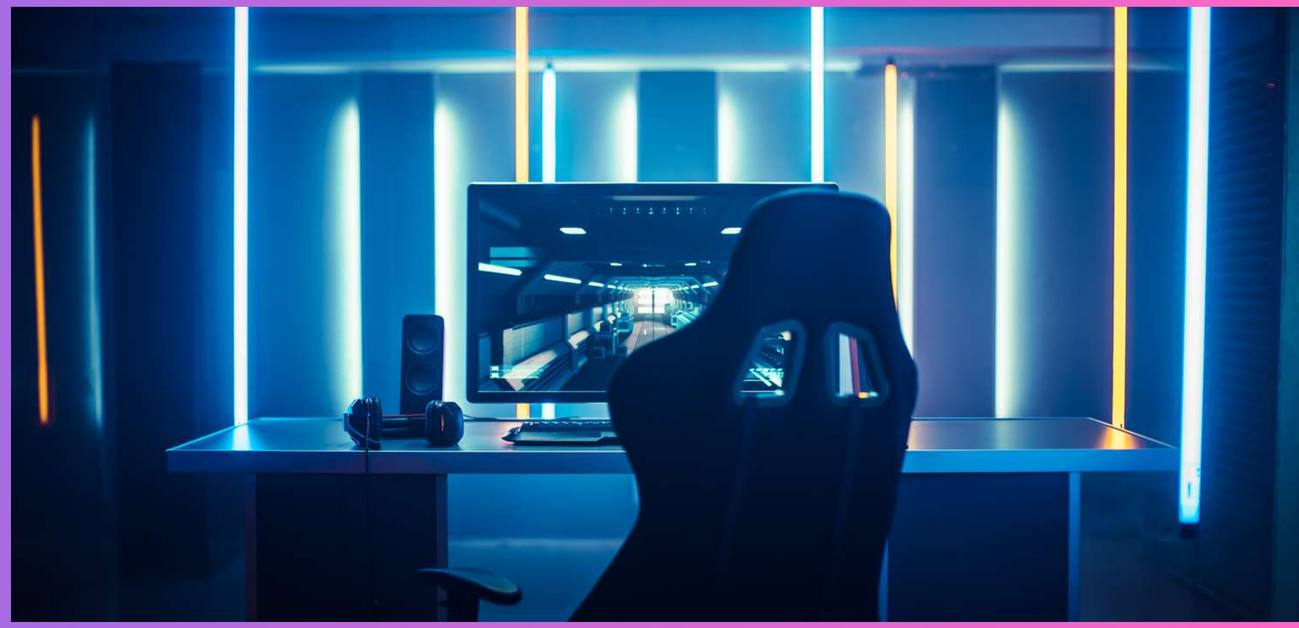
TITLE OF JOURNEL	FINDINGS
A Proposed Meta-Reality Immersive Development Pipeline: Generative AI Models and Extended Reality (XR) Content for the Metaverse-2023	AI shapes 2D art; 3D modeling lacks speed, interoperability, metaverse demands.AI shapes 2D art; 3D modeling lacks speed, interoperability, metaverse demands.
Older Adults' Views on Social Interactions and Online Socializing Games – A Qualitative Study - 2021	This study explored older adults' perspectives on social interactions and online socializing games, revealing a sample bias towards more educated participants.
What Is the Key for Older People to Show Interest in Playing Digital Learning Games? Initial Qualitative Findings from the LEAGE Project on a Multicultural European Sample - 2020	The study investigated factors influencing older people's interest in digital learning games through user evaluations, by conducting contests.
Interactive Videogame Technologies to Support Independence in the Elderly: A Narrative Review - 2019	The review on interactive video-game technologies for the elderly provided a synthesis of rehabilitation evidence, identified research gaps, and gave recommendations for future .
A mixed method to Approach Explore Users' Behavior in Playing Mobile Games - 2020	This study on mobile gaming utilizes a mixed-methods approach to investigate user behavior, emphasizing technological influences, game characteristics.

TITLE OF JOURNEL	FINDINGS
Desirable characteristics of games for older adults - 2020	This study on games for older adults identified 44 game characteristics, correlated them with user experience, and used visual insights, aiding game developers targeting the elderly.
Mobile game design for the elderly: A study with focus on the motivation to play - 2023	This study on mobile game design for the elderly uses games to enhance well-being, addressing and aims to understand elderly individuals motivations, emphasizing positive impacts like improved quality of life.
Development of Character Design Frameworks using Game Engine: Unreal Engine - 2020	This paper outlines the development of character design frameworks using Unreal Engine , comprehensive features, real-time rendering, and user-friendly tools.
Research on calculation optimization methods used in Computer Games Development - 2021	Optimization methods like culling , level of detail , Nanite system , more optimization methods presented by unreal engine
Synthesizing Attributes with Unreal Engine for Fine-grained Activity Analysis - 2019	Using synthetic data model training for a VR dataset training

TITLE OF JOURNEL	FINDINGS
Comparative analysis of Unity and Unreal Engine efficiency in creating virtual exhibitions of 3D scanned models-2021	Article explores virtual entertainment trends, proposes 3D scanning, compares Unity vs. Unreal, favoring Unity for efficiency.
Training Scene Construction and Motion Realization of Unmanned Craft based on Unreal Engine - 2023	Unreal Engine and 3D MAX combine for realistic unmanned craft training, enhancing efficiency, safety, and cost-effectiveness in simulations.
Using Digital Technology to Design a Simple Interactive System for Nostalgic Gaming to Promote the Health of Slightly Disabled Elderly People - 2022	Interactive gaming for slightly disabled elderly promotes nostalgia, well-being; simple design enhances usability and positive impact.
What Is the Key for Older People to Show Interest in Playing Digital Learning Games? Initial Qualitative Findings from the LEAGE Project on a Multicultural European Sample - 2018	User evaluations in diverse locations, led by psychologists, featured individual and group sessions with informed consent for recording.
An Approach to Generating Diverse Personas for Children and the Elderly for Software Development - 2023	Article explores age-related software interaction differences, identifies facets for children and elderly users, introduces a persona development tool for education, highlighting UX challenges .

TITLE OF JOURNEL	FINDINGS
Impact of recreational games in enhancing the quality of life of elderly adult tribals - 2021	Recreational games positively impact well-being, health, and empowerment, particularly beneficial for women facing multiple challenges in life.
Medical students' evaluation of a very simple online aging game to enhance their understanding of older patients - 2021	Aging simulation online course at Leipzig University positively impacted student perceptions, fostering perspective change with effective PDF materials.
What Do Older People Do When Sitting and Why? - 2018	Older individuals desires to play casual, brain-training, and social video games, fostering cognitive stimulation, social interaction, and enjoyable experiences.
The Cognitive Mobile Games for Older Adults User Experience Study - 2019	Positive user experiences with Finnish-developed cognitive games for Chinese elderly highlight cross-cultural effectiveness despite differences.
Designing digital games with & for Home-Dwelling older adults social interaction measures - 2022	Digital games adapt to pandemic, engaging older adults, fostering social interaction, yielding positive outcomes, requiring further impact assessment.

Module Description



01

Game Design:

- Game Conceptualization: Defining the core idea, theme, and mechanics of the game.
- Level Design: Planning and creating the layout, challenges, and pacing of game levels.
- Narrative Design: Crafting the story, characters, and overall narrative structure.

02

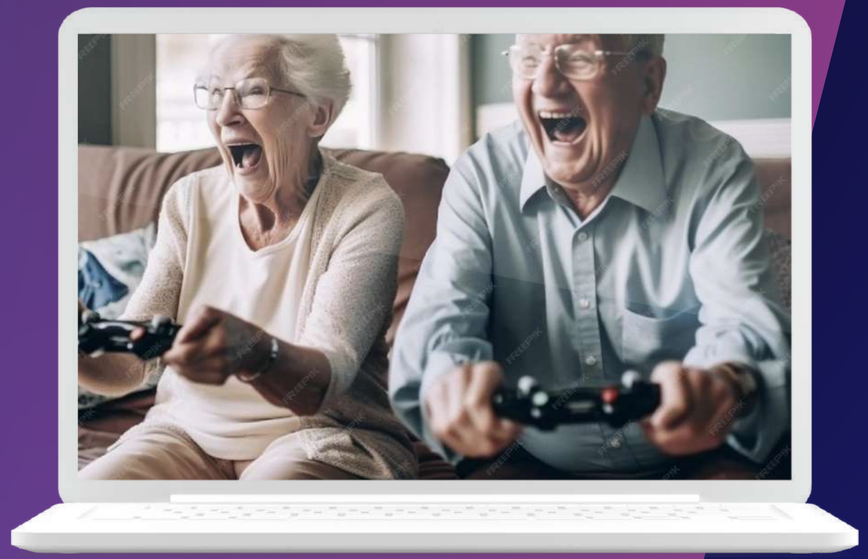
Programming:

- Game Engine: Unreal Engine or custom engines provide the core framework.
- Scripting Languages: C++ scripting language associated with the chosen game engine.

03

Graphics and Animation:

- 3D Modeling: Blender for creating game assets.
- Texturing: Applying textures to models using tools like Blender and Unreal Engine 5



04

Sound Design:

- Sound Editing: Audacity, Adobe Audition, or other audio editing tools for creating and editing sound effects.
- Sound Creation: Unreal Engine 5 is used for creating game sounds.

05

User Interface (UI) Design:

- UI/UX Design Tools: Adobe XD, Sketch, or Figma for designing user interfaces.
- UI Implementation: Integrating UI elements into the game using the chosen game engine.

06

Testing and Quality Assurance:

- Manual Testing: Thorough testing of game functionalities and identifying bugs.
- Automated Testing: Using tools for automated testing of repetitive or large-scale testing scenarios.

REQUIREMENT ANALYSIS

HARDWARE REQUIREMENTS

For Development:

Processor : Core i5 , i7
RAM : 16GB
GPU : 1650 4GB , 2050 4GB

For Game play:

Processor : Core i3, i5 , i7
RAM : 8GB,16GB
GPU : gtx650 1GB ,
radeon 550 1GB

NON-FUNCTIONAL REQUIREMENT

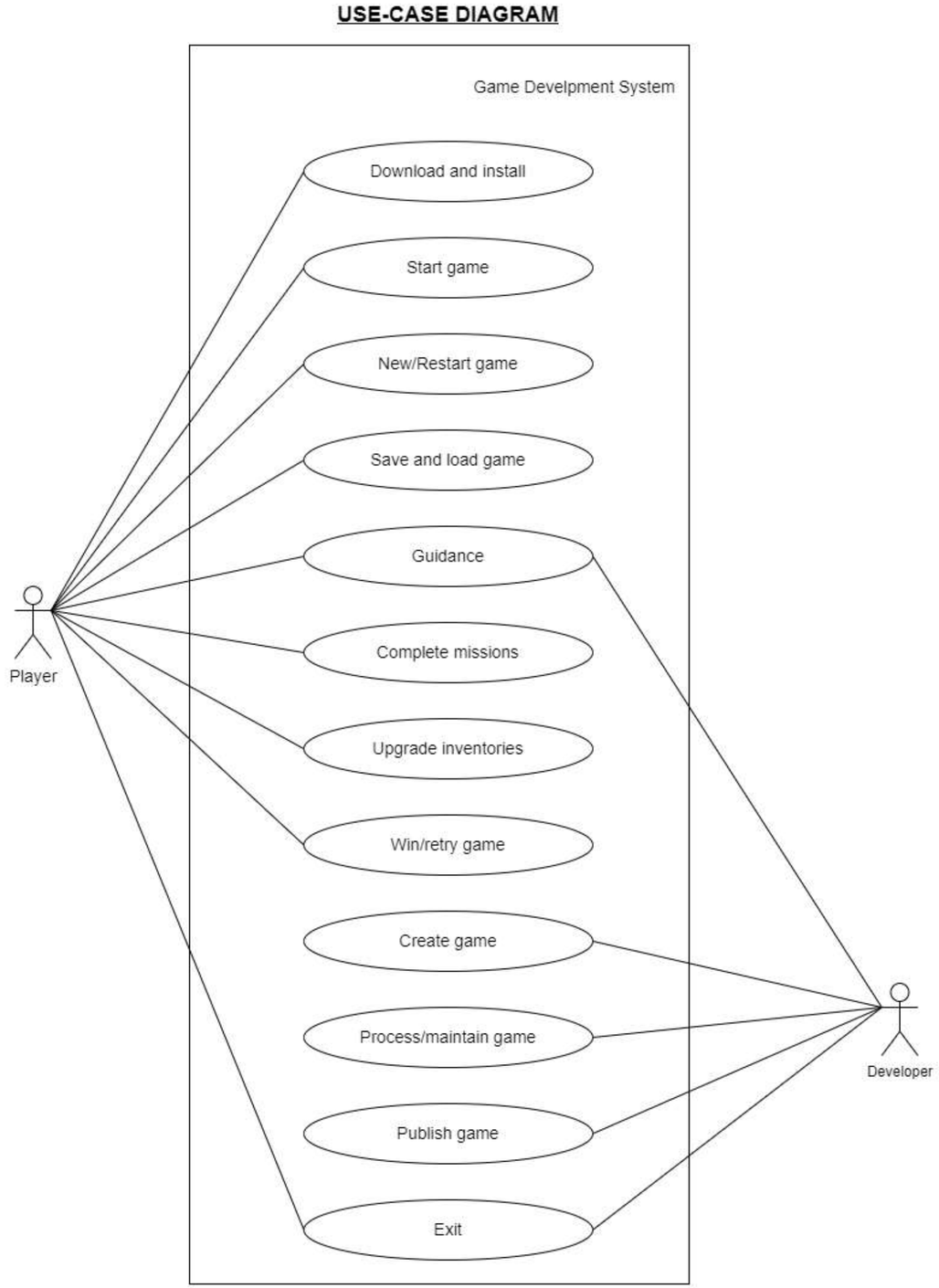
- Usability : Create a user-friendly interface with a focus on accessibility.
- Performance : Ensure fast response times and high frame rates for smooth gameplay.
- Security : Implement robust security measures to protect against data breaches.
- Compatibility : Ensure compatibility across various platforms and operating systems.
- Maintainability : Maintain code and assets for future updates and bug fixes.

FUNCTIONAL REQUIREMENT

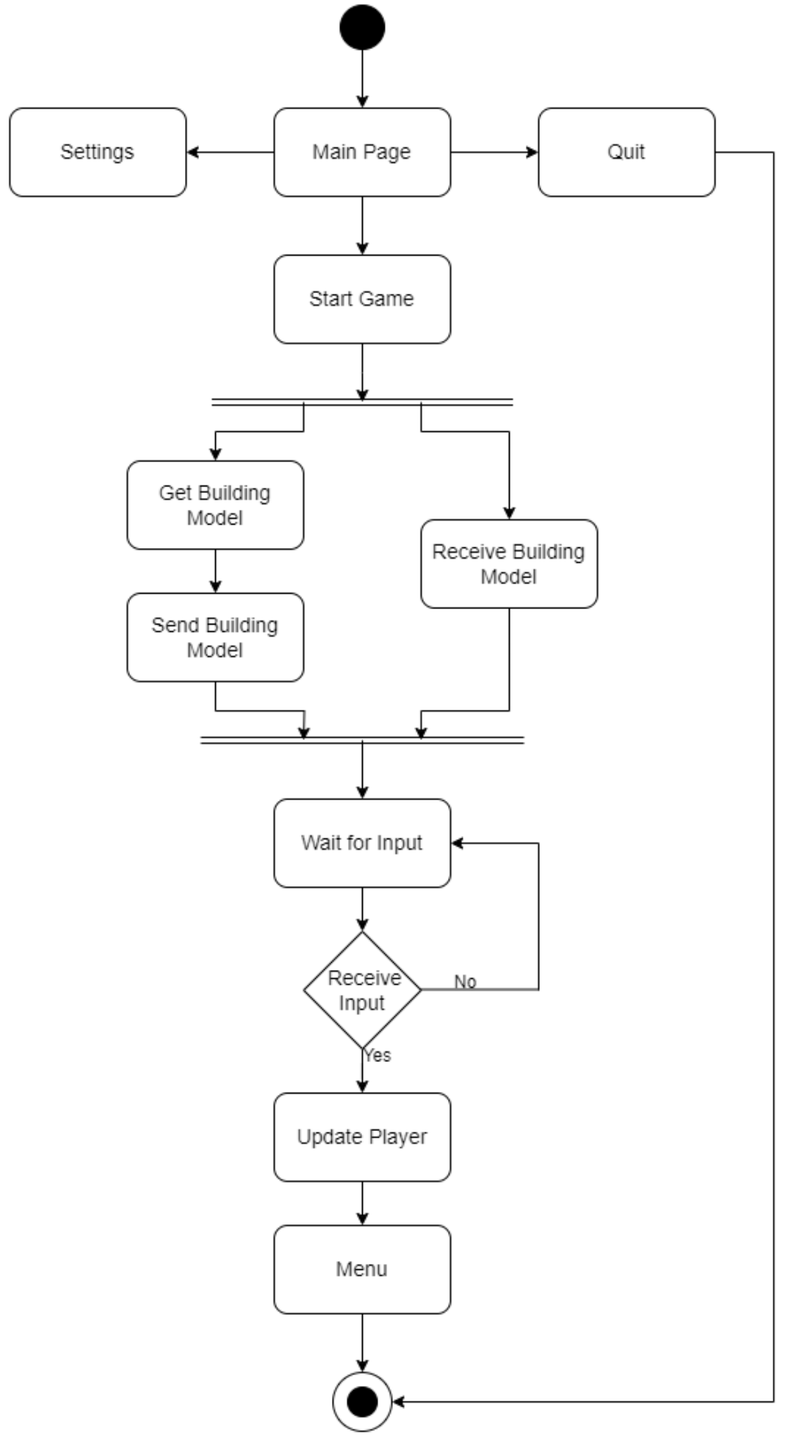
- Game Mechanics: Specifying the core gameplay mechanics, such as movement, combat, and character abilities.
- Story and Narrative: Outline the game's storyline, dialogues, and narrative elements.
- User Interface (UI): Design the in-game menus, HUD (Heads-Up Display), and other interface elements.
- Items and Inventory: Describe the items, equipment, and inventory systems in the game.
- Performance Optimization: Define performance-related features, such as graphics settings and options to optimize the game for different hardware configurations.

UML DIAGRAMS

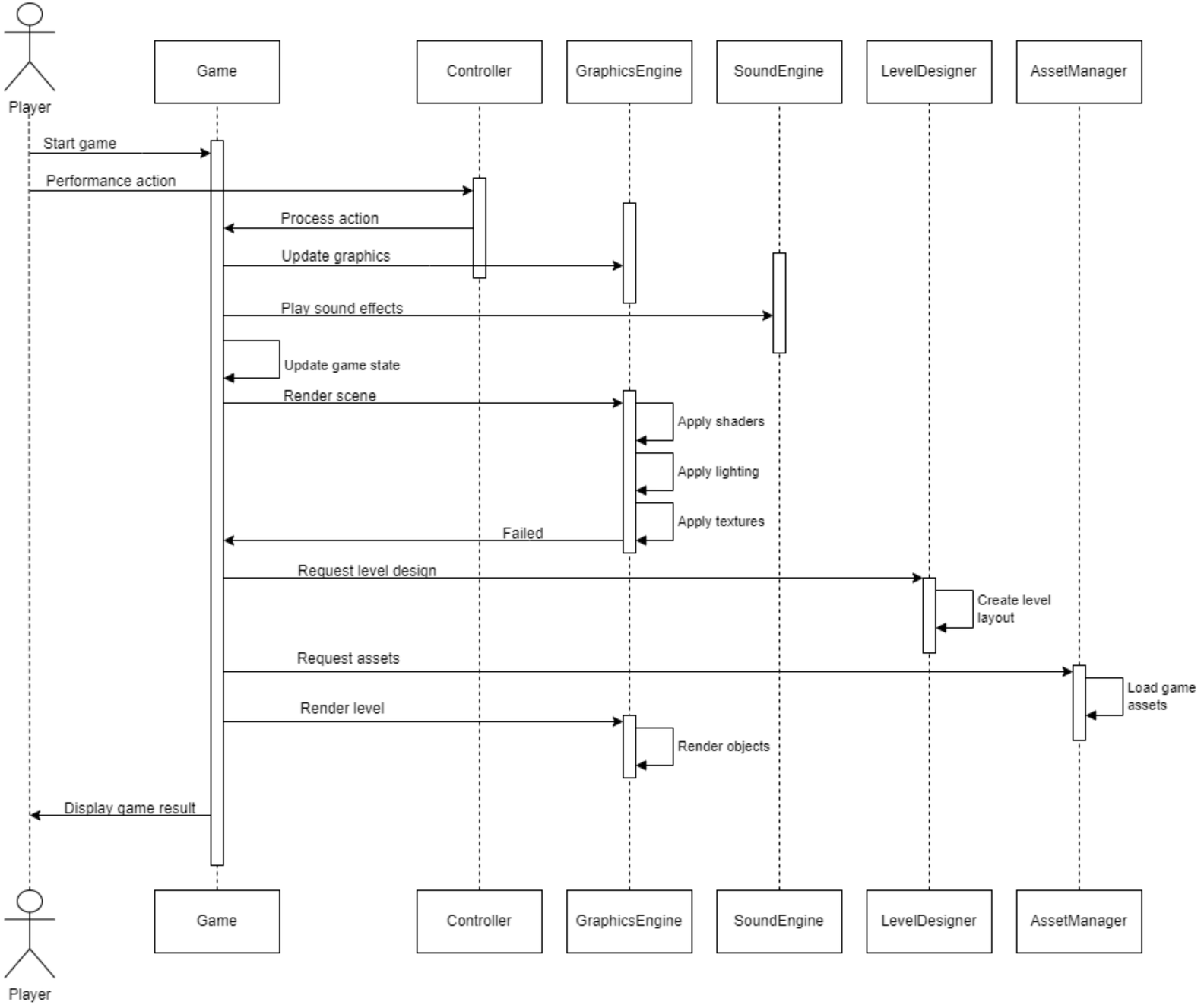
USE CASE DIAGRAM



ACTIVITY DIAGRAM



SEQUENCE DIAGRAM



TECHNOLOGY STACKS

BLENDER 3.6
UNREAL ENGINE 5.2
FIGMA
C++

TECHNOLOGY STACK

Blender 3.6

- 3D Modeling
- Rendering
- Texturing and Shading

Unreal Engine 5

- Blueprint Visual Scripting
- Animation and Cinematic
- Audio Tools and Effects

Figma

- User Interface (UI) Design
- Asset Creation and Management
- Animation and Interaction Design

C++

- Integration with Engines
- Cross-platform Developments
- Controls

Tool used for drawing diagram : Lucid Chart

GitHub : http://surl.li/nhrpp

GANTT CHART


PROCESS
Sep 08
Sep 21
Oct 07
Oct 21
Oct 31
Nov 03
Nov 13
Nov 23
Dec 07
Topic Finalization
Literature Survey
Requriement Analysis
Design
Documentation

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THANK YOU